

SBPC
Intellectual Property Department

Etudes & Productions Schlumberger
1, rue Henri Becquerel B.P. 202
92142 Clamart Cedex - France
Tel : + 33 (0)1 45 37 24 37
Fax : + 33 (0)1 45 37 20 10

Schlumberger

International Preliminary
Examination Authority
EUROPEAN PATENT OFFICE
D-80298 Munich
Allemagne

By Fax : 49 89 2399 4465

Clamart, September 22, 2005

International Patent Application No. **PCT/EP2004/010848**
International Filing Date: 27/09/2004
Our Ref: **WO 21.1209**

Dear Sirs,

Further to communication dated July 25th, 2005, applicants hereby submit comments on the written opinion and new page 10 of the set of claims.

As mentioned by the Examiner, mechanical properties of claim 1 refer to the set cement. New claim 1 has now this limitation.

Regarding inventive step, a first comment is made; the present invention provides advantages especially to slurry densities both at high density and at low density as stated paragraph 3 on page 3. Nevertheless, what is understood behind this sentence is that not only as prior art systems the mechanical properties of the set cement can be controlled for density between 1.44 g/cm³ and 1.92 g/cm³, but also and especially for systems with density beyond 1.44 g/cm³ and 1.92 g/cm³. Therefore this feature has not to be incorporated in the claim.

The technical problem is to control mechanical properties also for density beyond 1.44 g/cm³ and 1.92 g/cm³. If D1 is the closest prior art, even if the skilled in the art considers D3, he will not find solution, because the problem he is trying to solve is exactly the problem of D3. If D3 is the closest prior art, D1 teaches on particles size distribution but nothing on mechanical properties optimization.

The solution found in the present invention is to use cement only as finer particles and flexible material and filler as medium and coarse particles. This solution is not disclosed or suggested in prior art and is therefore believed to be inventive.

Further, the applicants believe that the feature *"the control of the mechanical properties of the ~~an~~ cement independently of density of the cementing composition slurry"* should be kept in the first claim. This feature should not be interpreted as a result to achieve but as a parameter related to cement (in the fine particles), flexible material and filler (in the medium and coarse particles): the composition ratio of cement/flexible material/filler allows a parameter of the mechanical properties (Young modulus, for example) to be optimum independently of the density.

Yours faithfully,

A handwritten signature in dark ink, appearing to read 'H Raybaud', with a stylized flourish at the end.

Hélène Raybaud
European Patent Attorney

Enc.

CLAIMS

- 1 A well cementing composition comprising a trimodal blend of particulate materials present as fine, medium and coarse particle size fractions, the particulate materials including cement, flexible particles, and a filler, characterized in that the cement comprises only the fine particle size fraction, and the flexible particles and filler comprise the medium and coarse particle size fractions allowing a control of the mechanical properties of the set cement independently of density of the cementing composition slurry.
- 2 The composition as claimed in claim 1, wherein the fine particle size fraction has an average particle size of 10 microns or less; the medium particle size fraction has an average particle size of 20 to 100 microns; and the large particle size fraction has an average particle size of 100 to 400 microns.
- 3 The composition as claimed in claim 1 or 2, wherein the cement comprises micro-cement or a mixture of micro-cement and slag.
- 4 The composition as claimed in any preceding claim, wherein the blend has a packing volume fraction of at least 0.78.
- 5 The composition as claimed in any preceding claim, wherein the medium and large particle size fractions comprise high-density fillers and flexible particles.
- 6 The composition as claimed in claim 5, wherein the high-density fillers comprise hematite or ilmenite.
- 7 The composition as claimed in claim 5 or 6 when mixed with water to form a slurry having a density above 1.92g/cm^3 (16 ppg).
- 8 The composition as claimed in of claims 1 - 4, wherein the medium and large particle size fractions comprise low-density fillers and flexible particles.

CLAIMS

- 1 A well cementing composition comprising a trimodal blend of particulate materials present as fine, medium and coarse particle size fractions, the particulate materials including cement, flexible particles, and a filler, characterized in that the cement comprises only the fine particle size fraction, and the flexible particles and filler comprise the medium and coarse particle size fractions allowing a control of the mechanical properties of the set cement independently of density of the cementing composition slurry.
- 2 The composition as claimed in claim 1, wherein the fine particle size fraction has an average particle size of 10 microns or less; the medium particle size fraction has an average particle size of 20 to 100 microns; and the large particle size fraction has an average particle size of 100 to 400 microns.
- 3 The composition as claimed in claim 1 or 2, wherein the cement comprises micro-cement or a mixture of micro-cement and slag.
- 4 The composition as claimed in any preceding claim, wherein the blend has a packing volume fraction of at least 0.78.
- 5 The composition as claimed in any preceding claim, wherein the medium and large particle size fractions comprise high-density fillers and flexible particles.
- 6 The composition as claimed in claim 5, wherein the high-density fillers comprise hematite or ilmenite.
- 7 The composition as claimed in claim 5 or 6 when mixed with water to form a slurry having a density above 1.92g/cm^3 (16 ppg).
- 8 The composition as claimed in of claims 1 - 4, wherein the medium and large particle size fractions comprise low-density fillers and flexible particles.